CGA-CPO, LANL Math and Science Academy (MSA) – Program Model

Los Alamos NATIONAL LABORATORY EST. 1943

Resources

LANL Resources

- MSA Staff
- LANL Community Programs Office (CPO)
  Community and Government Affairs (CGA)
- LANS

Regional, State, and National Partners

- New Mexico Consortium
- University of New Mexico (UNM)
- Bureau of Indian Education (BIE)
- Northern NM College
- Bradbury Science Museum
- WestED
- LANL Foundation
- Inquiry Science Education Consortium (ISEC)
- LASER I3

Concrete Activity

Core MSA Program – 3 Years
Intensive Summer Institute
- 2 weeks of research-based instruction
- 1 week Science-Citement or Math-Citement
- Coaching 2-3 sessions/semester
- After school team meetings 8hrs./sem.
- Video reflection and presentation 2x/yr.
- MSA days 2x/yr.

Instructional Coaching and PLC Support
- Includes complete coaching cycles, video review, and modeling throughout school year
- Ongoing PLC support and PD based on student learning needs

Ir-Rational Number Institute (Math PD)
- Math content 6 Saturdays per school year
- UNM collaboration

Science Professional Development
- Kit and Content Training
- Fundamentals of inquiry, effective instruction

Math and Science Writing PD
- Communication, concept development, and classroom modeling
- Science Notebooking

UNM/BIE Partnership
- Masters degree in Educational Leadership with a math and Native American focus
- Educational Leadership Doctorate

Develop Robust Partnerships
- Foster coherence among partners
- Team with partner organizations to provide high quality professional development

Short Term Outcomes

Enhanced Teacher Pedagogical and Content Knowledge
- Teachers develop a deep foundation of usable knowledge and skills by demonstrating growth in a combination of the following areas:
- Standards-based Education
- Effective Instruction and content specific pedagogy
- Math and science content knowledge
- Assessment practices for student learning
- Brain-based learning
- Student engagement and classroom management
- Math and science writing
- Common Core Math Standards
- Next Generation Science Standards
- A collaborative culture

(3) Build School-Based Leadership
- Instructional Leadership Development (i.e. coaches, lead teachers, facilitators)
- School and District Leadership Development (i.e. principals, and superintendents)

(4) Build Regional Capacity
- District and regional educational leaders who use research for high stakes decision making.
- Leverage existing district, regional, and state programs
- A cadre of professional development providers with the capacity to consistently deliver high quality products and services based on a shared vision of effective learning and teaching.

Long Term Outcomes

Effective Learning Experiences
Teachers use research-based instructional practices, materials, and assessments so that each student:
- Reveals preconceptions, initial reasoning, and beliefs
- Is intellectually engaged
- Uses evidence to generate explanations
- Communicates and critiques mathematical and scientific ideas and the ideas of others
- Makes sense of learning experience and draws appropriate understandings
- Makes connections between new and existing math and science concepts by understanding and organizing facts and information in new ways.
- Reflects on how personal understanding has changed over time and recognizes cognitive processes that lead to changes.

Improved School-Based Policies and Practices
School leaders implement policies and practices that support research-based math and science instruction and a collaborative culture of shared responsibility for student learning. Examples include: Professional Learning Communities, on-going professional development, and peer observation and coaching models.

Impacts

Increased STEM Pursuits
Increase the number of students who seek further study in:
STEM content
STEM careers

Improved Student Learning & Achievement

Increased Student Participation in STEM
Increased student participation and success in rigorous STEM courses K-12

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